

BLIND ASSISTANT SERVICE

¹M.Kavitha,²Abishek Singarayan,²P.Deepak,²N.Balamurugan

¹Assistant Professor,²Student, Department of Computer Science
Sriram Engineering College, Perumalpattu, Tiruvallur District-602024
kavitha.harinesh@gmail.com, abishekssingarayan@gmail.com,
.deepunkjak@gmail.com, kingkristy17@gmail.com

ABSTRACT

Nowadays the smart phones are equipped with touch based screens, enabling the user to interact in an easier and efficient way, compared to standard buttons. However, such screens require visual navigation, apparently different to access for the visually impaired. One of the technologies which aid the blind person to call in android mobile is Virtual Reality. Even though virtual reality is employed to carry out operations the blind person attention is one of the most important parameter. If the user commits any mistake to use the application it leads to a wrong call. So, in this paper we suggest technology to reduce the burdens of a blind person "Haptic Technology". Haptic is the science of applying tactile sensation to human interaction with computers. In our paper we have discussed the basic concepts behind haptic along with the haptic devices and how these devices are interacted to produce sense of touch and force feedback mechanisms. Also the implementation of this mechanism by means of haptic rendering and contact detection were discussed. Further we explained the storage and retrieval of haptic data while working with haptic devices.

1. INTRODUCTION

Haptic technology is a kinesthetic communication or 3D touch, which refers to any technology that can create an experience of touch by applying forces, vibrations, or motions to the user. Haptic interfaces provide force and touch feedback from virtual models on the computer to human users. In this paper we explain how a blind person can easily make a call to another person using android phone through haptic interfaces. The haptic interfaces also assist in various fields such as teaching, virtual reality robotics, medicine and so on

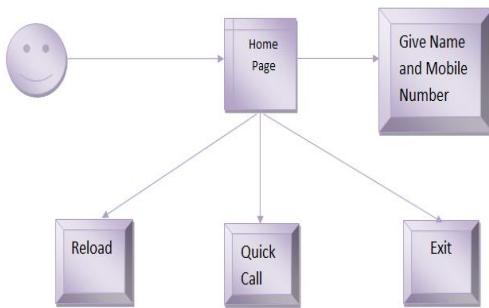
2. RELATED WORK

Despite the fact that mobile phones are not designed visually impaired, there are solutions that can compensate or improve such use. These are defined by the general term assistive service; this includes collecting haptic feedback through haptic interface devices by a person with disabilities [2]. For a visually impaired it is impossible to read the content on a screen; hence the aid of assistive service is a great benefit in their personal and professional life. They point out several aspects that could improve mobile phone accessibility. Mobile phones are designed with adequate size, shape and texture with good grip. The screen should be large and the buttons should have a logical placement for easier memorization of layout. Accessibility features such

as screen reader, zoom, magnifier, speech-to-text converter, display accommodations should be built-in to the smart phone for easy access. Finally, the smart phone should also provide easy access to emergency numbers.[1]

3. SERVICES

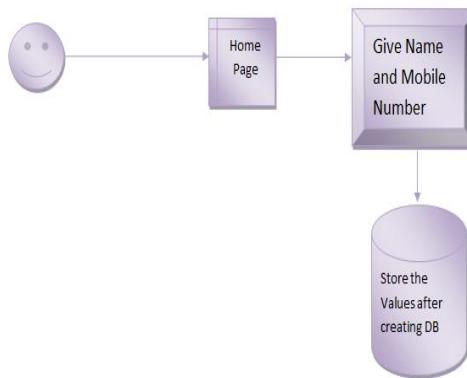
Blind person cannot able to make call with the already existing techniques where contacts are stored in the phone memory. An algorithm for search and call is done manually. To call, user needs to search the saved contacts from contact list. Search based algorithm in our application provides the following features like Reload to refresh the content, Quick Call to redirect to the blank space and Exit to exit our application.



3.1 Adding Contacts

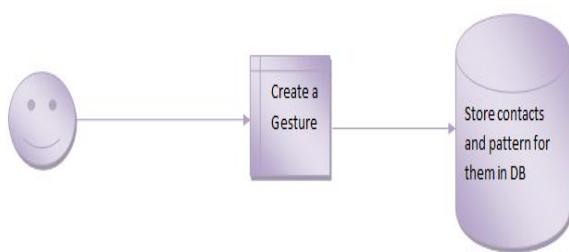
The application has an option to receive the Name and Mobile number. in the home page. After entering Name and Mobile number click the “Save” button and it will display a confirmation dialog box if you click “Yes” button it will save the details in the database and it will ask you to draw a pattern for the user.

If you select “No” in the dialog box, the data will not be saved and you can alter it again



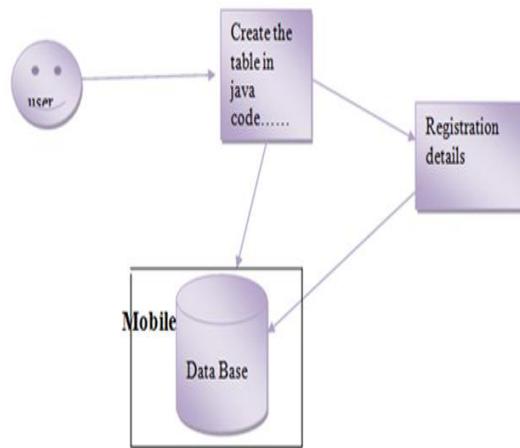
3.2 Creating Patterns

After clicking “Yes” button in dialog box a Message dialog box will appear as “Draw a pattern for saved name “At the same a Toast message will be displayed that “Contact saved successfully!!!” After clicking “Draw Pattern” button in the message dialog box it will re-direct you to a “Create a gesture” screen. In this screen draw any pattern for the contact person for whom you have saved the contact details. After drawing any pattern for the contact person, that person's name will appear on the Edit Text box once you click the done button. The done button will highlight only when pattern drawn on the specified area.



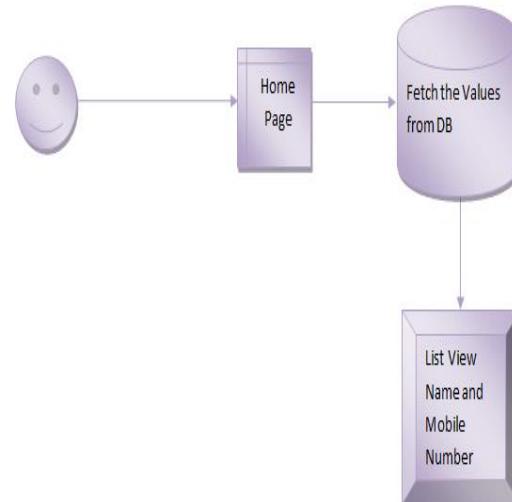
3.3 Storing and Retrieving

Contact name and number has been stored in the database. In our application SQLite Database is used for storing and fetching contact details.



3.4 Viewing Contact Details

The Home page will display the pattern along with the Contact name in the list after saving.



Input: User opens the application to view already added contact list in Home Screen

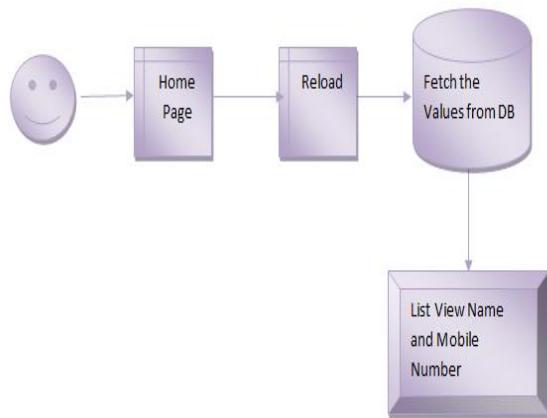
Output: User views contact details in list view

3.5 Reloading Module

After saving contacts and pattern, if any contacts are not displaying in the list then we need to click the

“Reload” button to refresh the content. It will display the pattern along with the Contact name in the list after saving.

5.Joseph, C., 2009. Challenges of Being Blind.*eHow*. Available at: http://www.ehow.com/about_5185162_challenges-being-blind.html [Accessed August 14, 2010].



4.CONCLUSION

In this paper, we discussed about the assistive services that we have developed using haptic technology which helps the visually impaired to make call by storing patterns for the users in the contact list. Further we explained the storage and retrieval of haptic data while working with haptic devices.

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- 5.Pinzon D, Byrns S, Zheng B. "Prevailing Trends in Haptic Feedback Simulation for Minimally Invasive Surgery". Surgical Innovation.2016 Feb.